



## **Storage Device, in Particular for Disc Media**

The invention concerns devices for storage of various objects, and in particular but not exclusively thin objects such as compact discs and vinyl discs.

Compact discs for music, video (DVD) and CD-ROM are normally stored in plastics cases, the opening of which is not always easy for young children or the elderly. Experience shows that many users do not always return to their cases the discs they use most often or those they need to pick up quickly, for example during a party, in order to keep the music playing. If the discs are simply placed on a table there is a considerable risk of them becoming scratched either as they are put down or later.

Existing compact disc storage devices are unsuitable for solving this problem.

Towers and boxes require the disc to be stored in its case. Furthermore only the edge of the case is visible, which does not facilitate identification of the disc the user requires. Finally these storage devices are relatively bulky because they are adapted to the dimensions of the cases and not to those of the actual discs, and generally they have a large capacity which is excessive when the user simply wishes to keep within reach the few discs he uses most often.

Another type of storage device comprises flexible plastics pockets with multiple compartments in which the discs are inserted. This solution reduces the space required for the storage device but does not avoid the user having to perform several operations, firstly to find the desired disc amongst all those contained in the pocket and then to extract this from and finally return it to the compartment. The latter operations entail a risk of damage to the disc and again are awkward for young children, the elderly or an impatient person.

The problems just discussed have their equivalent in the handling of vinyl discs, extraction of which from the pocket is a delicate and careful operation.

The object of the invention is to offer users of thin objects, such as compact or vinyl

discs, a storage device allowing easy and rapid access to the discs which they are likely to use most often, under the correct conditions of protection.

To this end, the object of the invention is a storage device, in particular for disc media, characterized in that it comprises:

- a base, of which four walls namely a front wall, a rear wall and two side walls, define a channel;
- and one or more separating elements intended to be inserted in said channel, and each consisting of a core of a rigid material covered on at least one of its surfaces with a compressible material, and enclosed in a material not damaging to the objects to be stored.

Preferably said base also comprises a wall constituting a base for said channel.

Said wall constituting the base of said channel and the upper edge of at least one of said front and rear walls may have a convex form.

Said rear wall may have a height greater than that of said front wall.

The edge facing the channel of at least one of the front and rear walls of the base may be scalloped with a curvature matching that of the periphery of a disc.

Said removable separating elements may each comprise an elongated core of a rigid material with concertina-like transverse fold lines and covered on one of its surfaces with a compressible material and enclosed in a material which is not damaging to the objects to be stored.

Said side walls of the base may be inclined at the same angle in relation to the vertical.

Said transverse fold lines may then be distributed over the core of the separating element so as to define an alternating sequence of short sides and long sides on said separating element.

Said compressible material may also be rounded, with extra thickness in its center part.

Said base and said separating elements may be separable.

As will be understood, the storage device according to the invention comprises two essential elements:

- a base, of which the four walls define a channel;
- and separating elements each consisting of a rigid core covered on at least one of its surfaces with a compressible material, the assembly being enclosed in a material which is non-damaging to the objects to be stored.

The objects to be stored are inserted between the separating elements and held there by the compression force they exert on the material covering the rigid core.

In a preferred embodiment the separating elements comprise a single elongated element, concertina-like with transverse fold lines arranged on a rigid core.

The invention will be better understood from the description below which is given with reference to the following attached drawings:

- figure 1 which depicts, viewed in perspective and separately, a base (figure 1a) and a concertina-like separating element (figure 1b) of a storage device according to the invention, the separating element being viewed in longitudinal section on figure 1c;
- figure 2 which depicts the device in figure 1 during use;
- figure 3 which shows a perspective and longitudinal section view of another example of a separating element which may be placed in the base;
- figure 4 which depicts, viewed in cross section, another example of the storage device according to the invention;
- figure 5 which depicts, viewed in perspective, another example of the storage device according to the invention;
- figure 6 which depicts, viewed in profile, another example of the storage device according to the invention.

The example of the storage device according to the invention shown in figure 1 comprises two distinct elements which may or may not be joined to each other by any definitive or temporary means: glue, adhesive tape, hook tape (Velcro®) etc.

The first element (figure 1a) is a base 1 defined by four walls: a front wall 2, a rear wall 3 and two side walls 4, 5. These walls 2 to 5 may be separate parts joined together to constitute the base 1 or, as shown, portions of a single element. They define between them a channel 6 of which the base (not visible on figure 1a) is formed by an additional wall. As a variant such an additional wall may be absent and the base of the channel is then delimited by the surface on which the base 1 is placed.

The second element (figures 1b and 1c) is a concertina-like separating element 7. It comprises:

- a core 8 of a rigid material such as cardboard with an elongated form, and a series of transverse fold lines 9 giving the element 7 its concertina-like shape; its thickness may for example be of the order of 1 mm;
- a layer 10 of a compressible material such as cotton wool arranged on the surface of the core 8, its thickness may for example be of the order of a few mm;
- an envelope 11 which surrounds the assembly over its entire surface; on figure 1b we see the longitudinal joint 12 between the two outer edges of the material sheet constituting the envelope 11; as it is this envelope which must be in contact with the objects to be stored in the device, it must be made of a material which is not damaging to these objects, for example a viscose-acetate velvet is particularly suitable for the storage of compact or vinyl discs; such a velvet is made for example by the company DENHOLME VELVETS Ltd under reference PAN 8940 CD.

Preferably, as shown on figure 1b, the compressible material 10 has a rounded form with extra thickness in its center area. This plays an important role in holding the objects.

On figure 2 we see the separating element 7 inserted in the channel 6 of the base 1 and compact discs 13 inserted in the spaces 14 open at the top and defined by the various portions of the separating element 7. The length of the separating element 7 is selected such that when the separating element 7 is inserted in the channel 6, the spaces 14 have a reduced or even zero width so that the discs 13 can be firstly inserted and secondly held under the effect of resistance to the opposing compression by the material 10. The discs 13 come to rest against the edges of the front face 2 and rear face 3 of the base 1, and can be withdrawn instantaneously from the storage element by simple traction.

The concertina-like separating element 7 may be a single element, or several such elements 7 can be placed next to each other in the channel 6.

Also it is possible for the core 8 to be reinforced at the level of the two end sides of the element 7 in order to improve the strength and rigidity of the assembly and thus avoid the need to give the side walls 4, 5 of the base 1 a considerable height.

The concertina-like separating element 7 can also be replaced by a multiplicity of individual separating elements 15 as shown on figure 3, placed next to each other so as to fill the channel 6. These individual separating elements 15 comprise a core 16 formed by a plate of a rigid material covered on one or (as shown) two of its surfaces with a compressible material 17, the assembly being enclosed in a sheet 18 of material not damaging to the objects to be placed between the separating elements. Preferably they can be separated from the base 1 by the user. In this way, by varying the number of separating elements 15 used in the same base 1, the user can select the number of objects which can be stored in the device and also the pressure to which they are subjected during storage.

Other variants of the device according to the invention can be considered.

For example as shown on figure 4, the rear wall 3 of the base 1 can have a height greater than that of the front wall 2. The rear wall 3 can thus serve as a stop on insertion of the disc 13 in the storage device.

Figure 4 also shows the front wall 2 fitted on its edge facing the channel 6 with scalloping 19, the curvature of which matches that of the periphery of the disc 13. This non-compulsory configuration gives better support of the discs 13 in the storage device.

Another variant of the invention shown on figure 5 consists of giving a convex form to the base of the channel 6 and the upper edges 20 of the front wall 2 and rear wall 3 (or just the upper edge 20 of the front face 2, in particular if the rear face 3 has a height greater than that of the front face 2). In this way the separating elements 7 or 15 form a fan which gives the discs 13 a similar arrangement, rendering their labeling more legible and facilitating their identification by the user. Preferably the side walls 4, 5 are inclined such that they contribute to the fanning of the separating elements 7, 15.

Another variant of the invention shown on figure 6 consists of inclining the side walls 4, 5 in relation to the vertical according to the same angle  $\alpha$  which is given to the separating element 7 or elements 15. Once again this allows better visibility of the labeling on the discs and creates an attractive aesthetic effect. Preferably, if a concertina-like separating element 7 is used, the effect is supported if the fold lines 9 are not spaced uniformly but define an alternating sequence of short sides 21 and long sides 22 on the concertina-like element 7.

Naturally the characteristics of the different variants which have just been described can be combined where mutually compatible. For example the scalloping 19 on the variant in figure 4 may be present on the edges of the front wall 2 and/or rear wall 3 of all variants described and depicted.

Use of a material such as viscose-acetate velvet, which is soft, non-napped and suitable for retaining dust, for the outer envelope 11, 18 of the separating elements 7, 15 allows the disc to be cleaned before its removal from the storage device. For this it is sufficient to give the disc a rotation movement. To this end it is therefore preferable that the separating elements 7, 15 have a height such that they cover the width of the recorded crown of the disc.

As stated the storage device according to the invention is ideally suited to the storage of all types of discs: vinyl, CD, CD-ROM etc. Evidently it can also be used for the storage of other articles, in particular thin articles such as envelopes or cardboard sheets.